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INSPECTING GRAIN SHIPMENTS FOR INDIA

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Cover Page

The worker on this month's cover is inspecting wheat with a pelican sampler. Tons of U.S. wheat are being inspected and shipped to India, which is suffering from its worst drought this century. See story on page 4.

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C&MS Reviews Microwave Cooking Of Meats

Proponents say microwaves can cook chicken parts to 180°F. center temperature in 2½ minutes with a 9% to 16% reduction in weight loss.

by Dr. K. E. Taylor

THE AMERICAN CONSUMER has come a long way since her cavewoman "sister" cooked dinosaur meat over an open fire. Modern kitchen ranges with electronically controlled ovens are becoming commonplace—so as to conserve the modern woman's time and energy and help her improve the finished product.

But home cooking methods are not the only improvements designed to break her chains to the kitchen range. New products and new methods of "preprocessing" foods are constantly being developed to make her task easier.

At the same time, however, adequate assurance must be given that such new methods are completely safe. In the field of meat and meat processing, this is the responsibility of the meat inspection service of the U.S. Department of Agriculture's Consumer and Marketing Service. Before any new cooking process can be used in a federally inspected plant, it must be thoroughly checked and approved by USDA.

An example of this protection to the consumer is still underway in the development of microwave cooking of meat products.

Microwave cooking was first considered in the early 1940's in conjunction with the development of radar. During World War II, radar came into its own to direct electric signals, which bounced back when they struck a metal object. Microwaves were used as the signals.

Early radar experts noticed that those parts of the equipment exposed to the microwaves became hot. From this, scientists realized that cooking with microwaves might be possible.

Microwave ovens were introduced on an experimental basis after World War II for home and institutional use. Scientists, however, believed that broader usage could be made of this new technique for large-scale production of preprocessed foods, using continuous-process microwave heating systems.

The principle of microwave heating stems from a rubbing together of the molecules within a product through which the microwaves pass. The molecules in the product—acting like miniature magnets—attempt to align themselves with the electrical field of the microwaves passing through it. From the action of the swiftly moving molecules, heat is created, just as in the old principle of rubbing two sticks together to start a campfire.

Proponents of microwave cooking say one of its main advantages is the uniformity of the heated product. They say conventional cooking causes molecules to react from the surface in, therefore heating successive layers of molecules. Microwaves pass through most materials uniformly and set all molecules in action at the same time.

Microwave experts give examples such as these for application of microwave cooking:

*A frozen block of meat approximately eight inches in diameter can be defrosted in a matter of minutes without cooking the product.

*Chicken parts are precooked to 180°F. center temperature in 2½ minutes at a production rate of 25 pounds per kilowatt-hour of the unit being used. Weight loss during cooking can be reduced to 14-16 percent for breasts and 9-11 percent for thighs.

*Sliced bacon is cooked and dried to any desired degree by using a combination of hot air and microwaves. One advantage is that storage life under refrigeration is more than doubled.

After many years of private research, in cooperation with the Federal government, a microwave cooking unit has been developed for large-scale processing and one major meat packer has applied for approval by USDA for its use.

The application stemmed from considerable difficulty in processing bacon for canning for military contracts. Broken slices, overcooked pieces, and a general lack of uniformity of cooking were the major problems. The firm turned to developing equipment to cook canned bacon through the use of microwaves.

In reviewing the application of new techniques, the safety of the consumer is the primary consideration of USDA's Consumer and Marketing Service, which administers the Federal meat inspection program.

Before new equipment can be approved for either experimental or permanent use, it must meet two basic requirements of C&MS

- The process cannot cause any unusual alteration in the protein molecule, vitamin content, or other nutrients that would detract from the wholesomeness and nutrition of the product.
- The equipment must be constructed so that it can be cleaned as often as necessary, to insure the maintenance of adequate sanitation standards.

In addition, experimental equipment cannot "crowd" the plant's working in such a manner as to interfere with plant sanitation or meat inspection.

Once the equipment is approved for use, Federal meat inspectors continue to observe the process in operation. Samples will be analyzed in meat inspection laboratories to insure that no harmful effects develop through use of the process.

And, naturally, the Federal meat inspector will assure the consumer that all meat processed in a federally inspected plant will be wholesome, truthfully labeled, and fit for human consumption.

(The author is Staff Officer, Procedures and Requirements, Meat Inspection Division, C&MS, USDA.)

Inspecting Grain Shipments For India

With India reeling from its worst drought of the century, speed is the primary interest, but quality counts too.

by Howard H. Woodworth

A STALK OF WHEAT—symbol of food and plenty to Americans—is today a symbol of hope to India's 470 million hungry people. Drought hit India this year—the worst in this century. Crops dried up in the fields and wasted away. With 370 people to feed for every square mile of land, India always has a difficult problem supplying enough food. Today, this problem seems impossible.

To conserve as much food as possible, many Indian states are rationing food and it has even been suggested that everyone skip a meal on Monday nights. The central government has urged its states to set limits on the number of guests at private parties and the number of courses that can be served.

Normally, India imports an average of 500,000 tons of grain from the U.S. monthly. Because of India's emergency, President Johnson announced in December that 1.5 million tons of food grains would be made available for immediate shipment to India under Public Law 480. In January, the first full month after the announcement, 681,300 tons of U.S. grain was loaded aboard ships bound for India—a 36 percent increase.

Though speed is the primary interest in these shipments, quality is not sacrificed. All of the grain and the vessels which carry it are carefully examined by inspectors licensed by the U.S. Department of Agriculture's Consumer and Marketing Service. This is not special treatment—most grain exported from the U.S. undergoes this inspection. Last year, the Grain Division of C&MS supervised the inspection of 1.56 billion bushels of exported grain—an all-time high.

Most grain in domestic commerce is also inspected to determine the quality and to facilitate marketing. Some grain may be inspected several times before it is finally consumed. Last year, the total of inspections and reinspections was equal to nearly 7 billion bushels.

The need for grain inspection in the U.S. was realized many years ago. As the Mississippi Valley was gradually brought under cultivation, surpluses of grain eventually filtered eastward to the consuming centers in increasing quantities. It was impractical for a grower to send a sample of his grain to the eastern merchants before the sale, so it became apparent that some form of basic communication between the two was needed.

The demand for uniform grades and inspection was placed at the doorstep of Congress. On August 11, 1916, the U.S. Grain Standards Act was passed giving the U.S. Department of Agriculture responsibility for establishing official standards and the task of enforcing these standards.

Today, 50 years later, there are 190 inspection points located in the grain producing areas of the U.S. and 740 inspectors licensed by USDA. Federal supervisors, employed by C&MS are located at the important grain markets to oversee the grading activities of all federally licensed grain inspectors. One of their primary concerns today is to make sure India receives quality grain.

At the Albany inspection point recently, some 560,000 bushels of wheat waited to be loaded into a tanker bound for India. Below the vessel's deck an inspector surveyed the tanks to make sure they were clean, dry, and free of insects, rodents and objectionable odors.

The tanker's previous cargo had been crude oil and the inspector noted there were traces of oil and oil odors still present in the tanks. These conditions, he decided, could lower the quality of the grain by the time the ship docked in India. He refused to allow the grain to be inspected until the tanks were cleaned. Since export sales are made on a "certificate-final" basis, no inspection means no inspection certificate and, in most cases, no sale.

The ship's tanks were steam cleaned and scraped until they were safe to transport the grain. When she returned to Albany the grain was loaded. During the loading, samples of the grain were taken from each 8,000 bushels for grading. More samples were taken to be examined for insects. These samples were then put in moisture-proof containers and taken to the inspection lab for analysis.

At the lab, the first thing the technician does is smell the grain to see if there are any garlicky, musty, sour or other objectionable odors which lower the grain's value. Then, he divides the sample into smaller representative samples for the other steps in the inspection process.

One sample is tested with an electrical moisture meter to determine its moisture content. Another sample is put through the dockage tester where the weed seeds, stems, dirt, chaff and other readily removable foreign materials are separated. This dockage is then weighed so the grader can compute the percentage it represents of the total sample. A portion of the dockage-free grain is then weighed on a beam scale to determine its test weight per bushel.

Since shrunken and broken kernels lower the quality of the grain, they must also be accounted for in determining the grade. They also figure into a larger category called "total defects."

The inspector checks the sample for grains of contrasting classes, other kinds of grain mixed in with the sample, and damaged kernels. Percentages of all these factors are then calculated and entered on the inspection certificate along with the results of the other tests. On the basis of these findings, a grade for the grain is determined and entered on the certificate.

All of the grain shipped to India will go through this process to make sure it is up to specifications. This is indeed a large task. But, according to Grain Division officials, the inspections are moving very smoothly—just as they anticipated. As one official put it, "It's just like a normal day—only more of it."

(The author is Chief, Inspection Branch, Grain Division, C&MS, USDA)

The Story of Bread Enrichment

THE YEAR, 1966, like all milestones in the life of Man, will serve to recall many events. But few have had so lasting an effect, touching the lives of more people of the world with greater benefit, than the 25th anniversary of the enrichment of bread, flour, and cereals.

Inaugurated as national policy on May 27, 1941, enrichment of bread and flour marked the successful and timely meshing of many diverse forces:

☐ The preceding decade had seen the discovery, isolation or synthesis of a number of vitamins, including those of the B-group, thiamine, niacin and riboflavin which, with iron, became part of the enrichment formula.

☐ Commercial methods for production of the B vitamins had been developed, eliminating the barrier of high cost.

☐ U.S. Department of Agriculture studies in the late 1930's had revealed that the nutritional needs of a large proportion of our citizens were not being met. Not uncommon were food deficiency diseases—beriberi, pellagra, riboflavin deficiency and simple anemia—caused by lack of iron and the B-vitamins.

☐ The Council on Foods and Nutrition of the American Medical Association, the Food and Nutrition Board of the National Research Council, the U.S. Public Health Service, the Food and Drug Administration, the U.S. Department of Agriculture, and leading scientists and industry groups representing millers and bakers—all agreed that flour and bread enrichment was a necessary step.

The Twentieth Century saw the calculated improvement of popular diet become policy—a preventive step involving total population, rather than therapy for only the sick; a positive, constructive act applied to everybody rather than quarantine, control, individual treatment, repair.

Few achievements like bread enrichment had been undertaken before in man's long struggle to improve himself and his environment.

The defense emergency of 1941 underscored the need for this sweeping nutritional improvement. Man had to be healthy to operate the machines of war. And civilians who backed them had to be healthy, too.

The amounts of enriching nutrients needed were soon established. The Food and Drug Administration made informal agreements with bakers nationwide to go ahead with the enriching. Within a year, over half of all bread and flour sold were enriched. Concern about the Nation's nutritional well-being did not end with World War II. Soon after, the Federal Government adopted official standards for bread and flour enrichment which have been in use ever since. Today enriched bread, flour and cereals are available to virtually all American consumers who need only read the label to be assured of important added food value.

USDA's Consumer and Marketing Service makes certain that only enriched bread is served in the National School Lunch Program, and that the cornmeal, flour, rice, and rolled wheat it donates to benefit children in schools and children and adults in needy families and charitable institutions are also enriched. These USDA policies have improved the diets of rich and poor alike in this country.

Since the beginning of flour and bread enrichment, food deficiency diseases caused by lack of the B vitamins have virtually disappeared. Today doctors rarely see the symptoms of these serious maladies that were all too common years ago. Enriched bread also helps combat simple anemia caused by lack of iron.

Beriberi: Gone is the typical swollen belly that identified the listless, mentally disturbed victim of acute thiamine deficiency, usually a child. Even in its mild state, the disease struck particularly at the poor. The victims showed irritability, bad memory, inability to concentrate, pain around the heart and other vague ailments.

Pellagra: Gone is the badge of poverty, "poor mouth," showing in reddish, cracked skin around the lips. Symptoms of this disease, also associated with shortages of protein in diet, were scaling, reddened eyelids, mental aberrations, stomach distress, and skin disorders.

Riboflavin Deficiency: Gone are the bad skin, marked by flaking, oily pimples around the mouth, nostrils, eyes, and ears.

Simple Anemia: Reduced is the number of victims, primarily women, exhibiting sluggishness and fatigue caused largely by an iron deficiency in the diet.

Credit for much of the improvement in public health must go to a general upgrading of popular diet. Then, too, goiter was virtually eliminated by the addition of iodine to table salt; rickets by the fortification of milk with vitamin D. But authorities acknowledge a major contribution in the single act of enriching bread and cereal products.

USDA studies of the nutritive value of the Nation's food supply indicate that enrichment of flour, bread, and other cereals adds about a third more thiamine, a fifth more iron and niacin and a tenth more riboflavin to the American diet than would otherwise be available.

Today it is estimated about 60 percent of all breadstuffs, family flour, macaroni foods, rice and corn products are enriched—now mandatory in only 30 States and Puerto Rico. The nutrients of the enrichment formula are added without extra cost or calories, without changing the taste, color, or texture of enriched foods.

The principle of enrichment has been extended throughout the world. Cereal foods donated by the USDA for the Food for Peace Program are enriched with iron and B vitamins, and just last year it was decided that calcium would be added too, as a further step toward meeting the food needs of the less fortunate, worldwide.

Enrichment has also been applied to other foods besides flour and cereals. For example, since last July most of the nonfat milk donated by USDA for overseas donation is fortified with vitamins A and D.

With the vast programs involving food distribution in the War on Poverty, Food for Peace and other activities acknowledging human need at home and abroad, the 25th anniversary of enrichment stands as a monument of man's contribution to man.

GRADING, ACCEPTANCE SERVICES CAN HELP EXPORT SALES

CAN CONSUMER and Marketing Service inspection, grading, and "acceptance" services help boost sales of U.S. foods in foreign markets?

The answer, judging by the interest of visitors to a recent European trade fair, is "yes."

The fair was the International Hotel and Catering Exhibition, held in London in January. This event, held every other year, is Europe's biggest trade fair for everyone engaged in public hospitality. It draws owners, managers, chefs, and buyers from the restaurants, hotels, and other public eating places of 46 nations.

This year, the U.S. was among the eight nations staging displays of the foods they have to offer the specialized and rapidly-growing institutional feeding industry. In England as in the U.S., this industry is characterized as the country's fastest-growing, and for the same reasons—rising incomes, shorter working hours, longer vacations, higher standards of living, all leading to more away-from-home eating.

Quality, convenience, and time- and money-saving features of U.S. foods were stressed in the exhibit staged by the U.S. Department of Agriculture in cooperation with U.S. commodity organizations, two U.S. airlines, and the Department of Interior.

Commodities featured included poultry, cranberries, fishery products, raisins, prunes, lard, rice, frozen citrus products, and fresh fruits and vegetables, specially flown in from Florida and California for the event.

Visitors to the exhibit were interested particularly in those products which are not yet in wide usage in England and other European countries—including frozen boneless turkey and chicken rolls and frozen citrus concentrates. Fresh fruits and vegetables out of season in European countries also were a center of attraction.

The question most frequently asked was "How can I be sure, if I order any of these products, that I can get the kind of quality I want?" To U.S. Department of Agriculture representatives, an obvious answer was: "Order by U.S. grade—and arrange to make use of USDA acceptance services to meet special requirements for institutional use."

The acceptance services, provided by C&MS commodity divisions, make it possible for institutional buyers to obtain Government assurance that their specific requirements have been met by the supplier. At the request of the buyer, commodity division representatives will assist in writing purchase specifications, or U.S. Government specifications may be used. These services are widely used by institutional buyers in the U.S., and they are available to overseas buyers who request them, as well. They are provided by the Government on a fee basis.

Few other countries can offer foreign buyers the assurance of quality that U.S. grading and acceptance services provide—and as more foreign buyers learn to use them, they should help to boost the sales of high-quality U.S. foods in those countries which, like most European ones, want and can afford to buy the best.

"It's quality that counts," says this British cafeteria manager, as he examines U.S. onions.

Boneless, frozen turkey and chicken rolls had special appeal at the U.S. exhibit in London. This British business couple discuss placing an order with agent of a U.S. poultry firm.

Market News Includes New Meat Report

THE MARKET VALUE of livestock is often influenced by the price of dressed meats—and thanks to the market news service of the U.S. Department of Agriculture's Consumer and Marketing Service livestock feeders can now keep posted on both livestock and dressed meat markets.

Here's how it pays off:

During a recent cold wave and snowstorm, livestock receipts were sharply curtailed at Midwestern markets. This resulted in limited slaughter for several days. Since consumers still wanted meats, however, prices were sharply higher, particularly on USDA Choice steer carcasses scaling 600 to 700 pounds.

An alert Indiana cattle feeder received this market news via radio at noon. This gave him sufficient time to sort out five loads of steers from his feedlot—cattle estimated to dress out 600 to 700 pounds a piece and grade USDA Choice.

Since his feedlot was located near a public market, these cattle were offered for sale early the following morning. Receipts were still limited due to bad road conditions. Packer buyers were looking for a "kill" (sufficient numbers to keep their slaughter crew occupied) and purchased these steers $1.00 to $1.50 per cwt. higher than the previous day's trade.

This alert cattle feeder received the market news, followed through and made more profit from the sale of his livestock . . . in this case several hundred dollars.

Dressed meat market news reports become more important as packers purchase more and more of their live animals from feedlots. A large percentage of cattle, hogs, sheep, and lambs going for slaughter never see a livestock auction or terminal market. For example, approximately 60,000 to 70,000 cattle are sold direct in the Interior Iowa-Southern Minnesota area each week.

Due to these changes, market news reporters have had to move closer to feeders, producers and purchasers of livestock in order to secure an accurate picture of market conditions.

Wholesale meat prices are being relied upon more heavily than ever before. Successful feedlot operators realize that it is very important to keep a constant eye on the dressed trade to learn in which direction the market is moving and what prices are being paid in the various market areas.

C&MS has just started another report, the *National Carlot-Volume Meat Trade Review*, to help producers and marketers follow the meat trade more closely. This report covers market trends and wholesale prices of dressed beef, lamb and fresh pork at New York, Chicago, Omaha, Denver and Los Angeles. Cow and bull beef prices from Philadelphia are also included.

This service was initiated January 10 and covers daily trading at the designated markets. It is being transmitted over USDA's leased wire system at approximately 3 p.m. (CST) and is available from market news offices throughout the country. Extension of meat market reporting in the State of Texas is planned within the near future.

With the meat trade review and numerous other official livestock and meat market reports available, the producer and feeder can market his livestock in an orderly manner, and select the best market for his product.

USDA Develops Grades For Poultry Roasts

by Ward Wagner

MORE THAN A FOURTH of all turkey meat going into processed food products is now being used for turkey roasts or turkey rolls.

Obviously, the turkey roasts—boneless poultry meat prepared in ready-to-cook form—have proven to be a highly popular new food item.

To help the consumer shop for this convenience item, and to assist processing plants in maintaining quality control, the U.S. Department of Agriculture has developed a grade standard specifically for poultry roasts. This is the first grade ever developed by USDA for a food product processed from poultry.

Turkey roasts bearing the "U.S. Grade A" shield are graded by specialists in USDA's Consumer and Marketing Service, which administers all grading programs for farm food products. All food grading, of course, is voluntary and a firm using the program pays for official grading as a service to you the consumer. More than a dozen poultry processors now use the grading service for poultry roasts, so chances are you can find "U.S. Grade A" turkey roasts in your area.

In order to qualify for the Grade A shield, a poultry roast must meet certain requirements. Some of these are as follows:

- It must be prepared from deboned, young poultry meat of "A" quality.
- It must be made in such a way that each slice of the roast will remain substantially intact when you serve it. This means that the roast must be made from large pieces of deboned poultry, or be fabricated in such a manner that the meat will not fall into many small pieces when sliced.
- All tendons, cartilage, etc., must be removed from the meat.
- The roast must be packed so it will retain its shape after defrosting and after cooking.
- Packaging of the roast must be neat and attractive.
- The label on the roast must accurately describe the roast's contents.
- Before the roast is graded, it must have been inspected for wholesomeness by USDA inspectors.

If a poultry processing firm wishes to sell Grade A poultry roasts, it must request grading service from C&MS. First, the poultry is graded individually by a USDA grader before it is processed. After the poultry is deboned, it is then regraded to insure that quality is maintained.

The label the firm wishes to use on the roast must be submitted to C&MS for approval. USDA food specialists examine the label and may cook a sample of the roast in the C&MS test kitchen—to make sure that the finished product meets the claims of the label.

Processing of the poultry roasts is under a grader's careful scrutiny from the time the birds are examined by Federal inspectors until the finished product is packaged. If the product fails to meet any of the factors for the Grade A standard anywhere along the line, it cannot bear the grade shield.

(The author is Assistant Chief of the Grading Branch, Poultry Division, C&MS, USDA, Washington D.C.)

Are you really a smart food shopper?

YOUR SUPERMARKET MAY *make you feel like a kid at a carnival, but it isn't always fun to shop for food. Today's shopper faces a wide choice of similar products, and a wide range of decisions to make each time she walks into the supermarket.*

If you are on a budget, or should be, and consider yourself well-endowed with common sense, take this quiz to see just how wise a shopper you really are.

a Consumer quiz . . .

1 The least expensive cuts of beef come from which part of the carcass?

(1) ☐ *Round*
(2) ☐ *Loin*
(3) ☐ *Chuck*
(4) ☐ *Rib*

2 Your store is selling a dozen Grade A Large eggs for 56 cents and a dozen Grade A Medium eggs for 47 cents. Which is the better buy in terms of getting the most egg for your money?

3 Which of the following is the best preparation for your regular food shopping spree?

(1) ☐ *make out a list and buy only what is on it*
(2) ☐ *check the ads to see what and where the best buys are*
(3) ☐ *walk around the store and buy whatever appeals to you*
(4) ☐ *don't keep a regular pattern of shopping.*

4 How can you tell if a cantaloup is ripe?

(1) ☐ *smell it*
(2) ☐ *squeeze it*
(3) ☐ *look for the date on the sticker*
(4) ☐ *none of these.*

5 "Bosc" and "Anjou" are varieties of

(1) ☐ *sardines*
(2) ☐ *grapes*
(3) ☐ *pears*
(4) ☐ *French beverages.*

6 Your market is having a sale on ground round at 89 cents a pound. The store also sells ground chuck at 59 cents a pound and plain ground beef at 39 cents a pound. You'd like to stock up on chopped beef and use it for meat loaf, spaghetti sauce, chile and casseroles. The best buy, in terms of nutrition and economy, is the

(1) ☐ *ground round*
(2) ☐ *ground chuck*
(3) ☐ *plain ground beef.*

7 The best way to store chicken in your refrigerator is

(1) ☐ *leave it in the original wrapping*
(2) ☐ *remove the original wrapping, then cover loosely with waxed paper*
(3) ☐ *remove the giblets and store uncovered.*

8 You can store canned food in your refrigerator after the can has been opened.

☐ *True* ☐ *False*

9 In which month are peaches in peak supply, most flavorful and economical?

(1) ☐ *March* *(3)* ☐ *all year*
(2) ☐ *September* *(4)* ☐ *June-July.*

10 It is important to know the storage time of many products to judge what quantity to buy. Match the following products with their recommended storage time in the refrigerator.

1. hard cheese	☐ *a. 3-5 days*
2. butter	☐ *b. two weeks*
3. eggs	☐ *c. several weeks*
4. ground meat	☐ *d. one week*
5. grapes	☐ *e. 1 to 2 days*

answers . . . *(Score 10 points for each correct answer.)*

1 (3) Chuck. Knowing your cuts of meat can save a lot of trouble, time and money. A handy booklet put out by the U.S. Department of Agriculture tells about the grades for beef, the cuts, and best cooking methods for each cut. Write for Marketing Bulletin No. 15, "U.S. Grades for Beef." Since meat takes up a good part of your food bill, you would do well to study the information in this booklet. (Please include your Zip Code number in your address when requesting any USDA publication).

2 The Grade A Medium eggs are the better buy. A rough rule of thumb to judge egg prices on the spot is this: take either one-eighth or seven cents (whichever is easier) from the price of Large eggs. Medium eggs of the same grade category below this price are a better buy. (Remember, size has nothing to do with quality.) In this example, Grade A Large are selling for 56 cents. Therefore, Grade A Medium eggs would have to sell for 49 cents to be equal in cost. Confused by this strategy? Send for another USDA Leaflet, No. 442, "How to Buy Eggs . . . " and wise-up on egg buying.

3 The *best* answer is (2), check the ads to see what and where the best buys are. Supermarkets often buy up large quantities of meat or other products and sell them as "specials." This is to attract customers to the store, but specials usually work to your advantage. Food ads also tell you what products are the best buys and are most plentiful that week.

Follow the other practices too. They are all good. You should definitely make out a list before you shop, but make it flexible. Do take advantage of the unadvertised specials in the store, but don't rely on impulse buying. It can be expensive.

It is also a good habit to read the columns of food editors in newspapers and magazines.

4 (1) smell it. When a cantaloup is ripe, it will have a distinctive cantaloup aroma, and a smooth stem scar. The blossom end will give slightly when you press with your thumb and the netting will be coarse and stand out in bold relief. For more tips on buying fruits and vegetables, send for USDA Marketing Bulletin No. 13, "Tips on Selecting Fruits and Vegetables."

5 (3) pears. Both are varities of pears grown in Western States and are available during several months because they keep well in cold storage. Bosc is elongated and usually heavily russeted. Anjou is regular pear shaped, smooth-skinned and may look green when displayed for sale. If you had your copy of "Tips on Selecting Fruits and Vegetables," you would have known the correct answer.

6 (3) Ordinary ground beef is fine for these uses. Ground chuck is recommended when you want hamburgers for the small fry. Ground round is used on special occasions.

7 (2) remove the original wrappings, cover loosely with waxed paper. Poultry, like other raw meats, is very perishable and should be stored in the coldest part of the refrigerator. The store wrappings should always be removed or punctured, and the poultry should be stored loosely covered. Do remove the giblets and store separately since they will spoil more rapidly than the rest of the bird. Poultry should be used within two days.

8 True. It is possible to store foods for several days in the can after opening, but be sure to keep them tightly covered. This will prevent other refrigerator odors from affecting the foods.

9 (4) Peaches are most plentiful during June and early July. Knowledge of this fact is not too important. Newspaper and radio ads tell you when peaches and many other products are in season and plentiful. Buying plentiful foods is a good practice and can save you money.

10

1. hard cheese – c. several weeks
2. butter – b. two weeks
3. eggs – d. one week
4. ground meat – e. 1 to 2 days
5. grapes – a. 3 to 5 days

Scoring: (Ten points for each correct answer. No. 10—score 2 points for each correct match.)

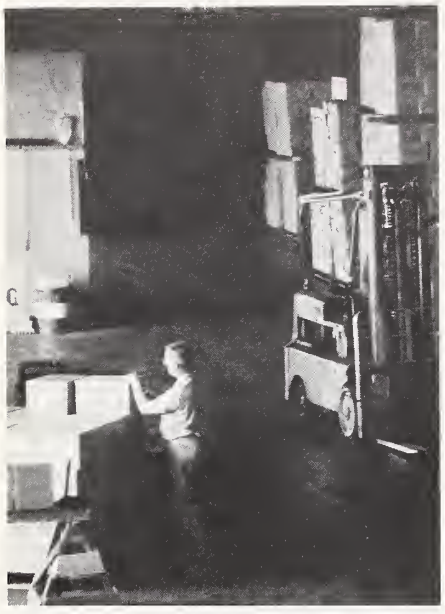
80 to 100—Excellent! You don't need too much extra help. Chances are you've had a lot of experience in shopping for food. (You probably have your copies of marketing bulletins from the U.S. Department of Agriculture.)

60 to 80—Good. You have a lot of common sense, but wouldn't it help to take advantage of some of these shopping tips?

Below 60—Fair. With a little experience in developing your common sense, and a little help from USDA's Consumer and Marketing Service, you're sure to improve.

Note: Marketing Bulletin No. 15, "U.S. Grades for Beef," Marketing Bulletin No. 13, "Tips on Selecting Fruits and Vegetables," and Leaflet No. 442, "How to Buy Eggs . . . " can be obtained from the U.S. Department of Agriculture, Office of Information, Washington, D.C. 20250.

Federal-State Cooperation In Warehouse Inspection



Federal-State duplication in supervising warehouses like the one above is avoided under agreements for cooperative examination.

States are sharing with Federal Government responsibilities and costs for examining warehouses and products, thus insuring safekeeping of the products stored.

STATE AND FEDERAL cooperation in examining warehouses is paying off in several States by providing protection at less cost, and less annoyance to the warehouses.

The U.S. Department of Agriculture provides periodic inspection of warehouses and their contents under the U.S. Warehouse Act for those who apply and can qualify for a Federal license.

USDA's Consumer and Marketing Service makes sure that the warehouseman: has the required minimum net worth, furnishes bond based on the capacity of the warehouse, and carries required insurance.

C&MS also examines the warehouse to determine whether it is suitable for proper storage of the particular agricultural product for which it is licensed, and whether the grade and quantity of stocks are equivalent to obligations. Corrective action is required where necessary.

Checking to determine adequacy of books and records is also necessary.

As a result, such stored goods maintain value. The integrity of warehouse receipts representing them is protected. These receipts are bought, sold, or used to obtain credit as easily as the products themselves.

In addition to inspecting federally licensed warehouses C&MS makes regular examinations of warehouses operating under contracts with the Commodity Credit Corporation to protect Government-owned commodities acquired under price-support programs or pledged against price-support loans.

Individual States, too, may license and bond warehouses. To avoid duplication, the State of Minnesota has recently joined seven other States which each have agreements for cooperative warehouse examination.

Under one arrangement, Minnesota contributes to a joint program by furnishing examining personnel and their salaries. They serve under Federal appointment and become part of the Federal examining staff. The Federal Government pays per diem and travel expenses and provides training and supervision. North Carolina has a similar arrangement.

With this cooperative agreement, necessary inspection of all federally licensed warehouses, non-federally licensed houses storing Commodity Credit Corporation commodities, and State licensed warehouses may be combined into a single function.

Minnesota, for example, has licensed about 600 grain warehouses.

Under the new plan, the program administered by the Transportation and Warehouse Division of C&MS will benefit from more examiners with no additional salaries to pay; Minnesota will have a greatly improved examination program; and duplication of examination, costly and annoying to warehousemen, will be eliminated.

A different type of plan is in effect in the other six States. About 10 years ago, Kansas, Nebraska, and Wyoming were examining many of the same warehouses the Federal Government examined.

Since they had good laws and competent supervision of their own, an arrangement was effected whereby a portion of their expenses are federally paid and they examine non-federally licensed warehouses operating under contracts with Commodity Credit Corporation as well as the State licensed warehouses. The Federal Government, however, continues to examine all federally licensed warehouses. These States file regular reports with the Transportation and Warehouse Division.

Oregon, Washington, and Idaho have similar agreements.

There are now about 10,000 grain warehouses across the country under Commodity Credit Corporation contracts. Of these, about 1300 are licensed under the U.S. Warehouse Act.

In addition, about 1200 cotton warehouses are under CCC contract, of which about 600 are federally licensed.

Idaho Expands Potato Potential

by Wilson Kellogg

FOR IDAHO'S POTATO growers, names like *Honking Goose, Murphy Flats, Flying H,* and *Rim Rock* represent dynamic changes taking place in their industry.

These are the names of some of the sites—not even on the map yet—that comprise a new potato production area, up on the rim land and plateaus high above the Snake River in southwestern Idaho.

Until a couple of years ago, only range grass and sagebrush grew there—even though plentiful supplies of river water were only a short distance below. A few homesteaders gave dry-land farming a try, but failed.

Today, however, the land is being made productive by lifting precious irrigation water from the Snake to the tops of the mesas. Potatoes grown on the mesas are helping to supply the growing demand for processing and fresh market potatoes. In fact, to a great extent, Idaho's record yield of potatoes in 1965 can be attributed to production in this new area.

In all, there are 27 project sites, covering just over 185,000 acres. Most completely developed so far is Dry Lake, with about 23,300 acres, while the other 26 range from 640 to 31,000 acres each.

Visit the area and you'll see pumping stations along the banks of the Snake raising water anywhere from 50 to 800 feet through 18 to 30-inch steel pipes almost straight up to the mesas above. Irrigation on the mesas is accomplished by sprinkler systems.

For all the projects combined, there are 37 potato storages. Dry Lake has 12 of these; Black Mesa, 10. The largest to date is on the Flying H—holding 450,000 hundredweight of potatoes. Some storages are equipped with refrigeration, others with controlled temperature and humidity.

Potatoes from some of the projects are stored in processor or shipper storages some distance from the area, but plans are underway to construct storages on several projects which don't yet have them.

Agriculture on the mesas is not confined to potatoes. You'll see growing there some onions, grains, corn, beans, sugar beets, melons, lettuce, clover, alfalfa—even experimental cotton! Several units are in the cattle business, with well balanced herds. But, as one might expect in Idaho, the big crop is potatoes.

Yields of potatoes run from 320 to 450 hundredweight per acre. Quality is above average, and sizes vary with the season. Russet Burbanks weighing 30 to 40 ounces are a common top size from the area.

Most of the potatoes are grown under contract for processors, though many are purchased when harvested or during the storage period. Payment methods vary. Some processors pay $1.50 per hundredweight for potatoes grading 50 percent U.S. No. 1 grade. They deduct 1 cent for each percent below 50 percent and add 1 cent for each percent above 50 percent.

Inspectors, working under cooperative supervision of the U.S. Department of Agriculture's Consumer and Marketing Service and the Idaho State Department of Agriculture, determine the grades, sizes, and usability of most of the potato tonnage. Some are stationed at the storages in the production area; others are in processing plants or storages miles away.

This Federal-State Inspection Service also employs dozens of men who draw samples of potatoes throughout the production area. Sampling usually is done at the point where the field trucks unload into the storage cellar or into large semi-trucks, just before the potatoes are moved to distant processors or storages. Each sample is identified and delivered to the inspection station in a sealed bag. Buyers and sellers of the mesa-grown potatoes have found that the inspection certificates enable them to conveniently and equitably determine prices to fulfill their sales contracts.

The bulk of the mesa projects are near U.S. Highway 30, Interstate 80N, and a railroad main line. Other highways intersect or are nearby, and transportation is available at all points. New bridges cross the Snake, and some access roads to the specific projects have been built, with more to come.

Idaho's southwestern mesa country is being made productive by lifting irrigation water from the Snake River to the tops of the mesas.

The average operator uses air transportation to travel from field to field and hop the deep canyons. You're even apt to see helicopters flying over. Producers often use two-way radios for communication—both in the air and on the land.

From day to day, as the development progresses, you may see new storages and machine and equipment sheds being erected. Up on the plateaus, homes and apartments for management and laborers are beginning to dot the landscape in orderly fashion.

You can visualize food and fiber for millions as you cast your eye upon the plateaus to the north, south, and west—those lands yet to taste the cool waters of the mighty Snake.

(The author, headquartered in Boise, Idaho, is Federal Inspection Supervisor with the Fruit and Vegetable Division, Consumer and Marketing Service, USDA.)

CONSUMER AND MARKETING BRIEFS

Selected short items on C&MS activities in consumer protection, marketing services, market regulation, and consumer food programs.

CALIFORNIANS SHOP BY MARKET NEWS

The Federal-State Market News Service in California recently started reporting prices of retail meat cuts to consumers. Previously, Federal-State market news has reported meat prices only at wholesale.

Market news reporters secure information on sale and regular prices of beef chuck roasts, rib roasts, round steak and T-bone steak from chain store operators and furnish the information to the California Department of Agriculture. The department then sends out the information to consumers via radio, television and press wire.

The first "dry run" consumer report was voiced over TV in early February from Sacramento. This report included prices on Grade AA Large eggs as well as the meat cuts.

The California Market News people anticipate expansion of the new program to include releases of similar information from three locations—Sacramento, Los Angeles and Fresno.

C&MS HAS "SOMETHING TO CROW ABOUT"

"Something to Crow About," a film produced for USDA's Consumer and Marketing Service, received a Bronze Award at the IVth International Agricultural Film Festival held recently in Berlin.

Some 160 films were entered by 29 nations. "Something to Crow About" won third place among 11 entries in the "Publicity" category.

This film follows a European magazine writer through a hatchery, a broiler farm, a processing plant, and a supermarket—showing how consumers get high quality poultry products at reasonable prices.

PLENTIFUL FOODS FOR APRIL

The "big four" riding herd for the Consumer and Marketing Service's list of plentiful foods for April consumers and Easter menu-planners are raisins, honey, grape juice and peanuts and peanut products.

Greening April's plentiful foods list tells us how generous the good earth has been in providing these nourishing foods. In the matter of health-packed raisins, which are produced mainly in California's sundrenched vineyards, last year's production of 232,000 tons was the largest since 1952—a stretch of some 13 years. The five-year average is around 220,000 tons. At current prices, housewives will be happy to know that tasty raisins are indeed a good buy.

Honey bees also turned in a plentiful crop last year, and this long-time popular item, which can be used in so many ways, should be kept on the family's shopping lists, for its natural goodness is popular with all the family. And honey is now selling at reasonable prices, too.

Grape juice, also a popular item in almost every household, is in excellent supply from last year's bumper crop of grapes and, again, prices favor family food budget.

The 1965 peanut crop, biggest ever produced in this country is a very fitting winder-upper for the April Plentiful Foods List, for peanuts and their products never fail to satisfy all the family, whether included in menus or eaten out-of-hand.

C&MS FIELD OFFICE WINS AWARD

C&MS' Food Distribution field office in Toledo, Ohio was recently awarded a certificate of commendation by the Toledo-Lucas County Civil Defense office for outstanding volunteer work following the April 11 (Good Friday) tornado last spring.

POLICE REFER NEEDY TO FOOD STAMP OFFICE

Police officials in Winston-Salem, N.C., apparently believe two old sayings: "Poverty breeds crime" and "An ounce of prevention is worth a pound of cure."

About 95 percent of police contacts there are with low-income people—and they often discover cases of dire need. Officers now on duty are being instructed to refer needy persons to the Welfare Department's food stamp certification office. And the Officer-in-Charge of the Police Academy will include an explanation of the Food Stamp Program as part of the training for new recruits.

Winston-Salem is the county seat of Forsyth county, which has taken part in the U.S. Department of Agriculture's Food Stamp Program since March 1965.

FOOD IN TIME OF NEED

A television short, entitled, "Food in Time of Need," has just been released by the Consumer and Marketing Service. This three-minute, black-and-white film documents food distribution activities in Schuylkill County, Pa.

Schuylkill County is an anthracite coal-mining region, suffering from the same unsettled economic conditions found down the length of the Appalachian Mountains. Thousands of people in Schuylkill County—low-income families and families on public assistance—use U.S. Department of Agriculture foods to supplement their regular diets. The county home for the aged conducts an extensive feeding operation for its guests, maintaining high nutritional levels with donated foods.

"Food in Time of Need" shows the Commodity Distribution Program at work in Pennsylvania.

MILK PROMOTION GROUP HELPS ESTABLISH FOOD STAMP PROGRAM

Connecticut Milk for Health, a milk and dairy product industry group has aided significantly in establishing USDA's Food Stamp Program in the Waterbury, Connecticut, area. Activities of the group include:

• Placing posters in grocery store windows. These signs are designed to stimulate additional food buying, especially milk and dairy products. About 1,500 have been placed since last May, when the Food Stamp Program was introduced in the area.

• Preparation of a pamphlet entitled "Facts About the Food Stamp Program," which was mailed directly to more than 3,000 low income families.

• A meeting for Waterbury milk distributors at which Federal and State administrators of the program explained how the dealers could serve home-delivery food stamp customers.

• A mass meeting in the low income housing area of Waterbury to explain program benefits.

• Preparation of a leaflet explaining the program. The leaflet is being mailed to 1,580 Connecticut welfare recipients with their checks.

A POSSIBLE RECORD SHIP LOADING

About 960,000 bushels of wheat were recently loaded aboard a motor vessel from Elevator B in Galveston, Tex., in 9 hours and 20 minutes. A few days later, about 932,000 bushels of grain sorghum were loaded aboard another vessel in 9 hours and 10 minutes from the same elevator.

The maximum rate of loading was about 139,000 bushels during one hour which is believed to be a record for loading grain into an export vessel.

This grain, headed for Hamburg, Germany, was inspected under supervision of U.S. Department of Agriculture's Consumer and Marketing Service as required by the Grain Standards Act.

INTERPRETATION PROPOSED ON TERM "BICOLORED SOYBEANS"

The Grain Division, C&MS, in response to complaints regarding the downgrading of soybeans in some areas because of the presence of bicolored soybeans, has proposed an interpretation of the definition of the term "bicolored soybeans" in the U.S. soybean standards.

Under the proposal, soybeans with black or brown streaks or splotches would be considered bicolored if the black or brown coloring covered 50 percent or more of the seedcoat.

The existing definition does not specify any degrees of coloring necessary for the soybeans to be considered bicolored. According to the definition, soybeans with seedcoats of two colors—one of which is black or brown—are considered bicolored. The standards also provide maximum limits of 1, 2, and 5 percent of these soybeans in grades No. 1, 2, and 3 respectively. In recent months this has become an important factor in downgrading yellow soybeans in some areas.

According to grain officials, the proposal would also allow those who wish to obtain soybeans without black or brown streaks or splotches to indicate this on their contract and request the percentage of soybeans with this coloring be shown on the grading certificate.

The bicolor is caused by the coloring from the black hilum bleeding to other parts of the seedcoat. Merchandisers indicate, however, that the streaks or splotches are considered to be appearance factors only and according to soybean specialists they are not known to be related to the oil content or quality in the soybeans and they are not necessarily genetic characteristics.

The proposal was published February 19 in the Federal Register. Deadline for comments was March 20.

FOOD STAMP TESTIMONIAL

The economic impact of the Food Stamp Program is attested to by a retailer in Bernalillo, New Mexico. The retailer reports that his sales were normally about $250 during the first week of the month, before the Food Stamp Program opened. Now, however, his sales approximate $1,700 during the same period of time, and much of the increased sales are in meat products.

MEAT TIPS

—from meat inspectors of USDA's Consumer and Marketing Service

One of the many ways that meat inspectors of USDA's Consumer and Marketing Service protect the consumer is through their close watch on the artificial coloring of processed meat products. For example, a label request for "Frozen Beef Loin Steaks" was not approved by C&MS because the firm submitting the label intended to treat the meat with a caramel color. C&MS reasoned that such coloring of fresh meat could mislead the consumer.

* * *

As part of their normal routine, Federal meat inspectors inspect all equipment used in the preparation of meat products to make sure that it can be effectively cleaned. When a packer plans to remodel his plant, each piece of new equipment must be approved by C&MS to insure that adequate sanitation standards can be maintained. A recent request to use a new type of brush to remove bone-dust from freshly cut meat was rejected because the brushes could not be properly cleaned.

* * *

Consumer familiarity and traditional methods of preparation of certain meat products play a large part in approval of a label by USDA's Consumer and Marketing Service. "Lebanon Bologna" has traditionally been prepared with beef, excluding all other meats, meat products, and extenders. In keeping with this tradition, USDA rejected a proposed label for "Lebanon Bologna" because the list of ingredients showed that the meat ingredients were beef and pork hearts.

What the label Means: ON THE FRANKS YOU BUY

by Nancy Duckworth

CALL THEM WIENERS . . . frankfurters . . . hotdogs . . . or whatever you like—they're still as symbolic of America as baseball or the Statue of Liberty.

This great American meat product is consumed in the billions by young and old alike, in fancy buffet dishes or wrapped in a bun for a quick snack.

In fact, enough frankfurters were produced under Federal meat inspection and later consumed in a myriad of forms last year to equal 127 round trips between New York and San Francisco.

Yet, as popular as they are, frankfurters are known by many names with seemingly vague descriptions. And, as American as they are, frankfurters are actually of European ancestry.

Perhaps these two factors lead to most of the confusion in the minds of consumers. Understanding what the label represents, in addition to reading it thoroughly, is your best guide to your best buys.

In reality, frankfurters are one of more than 200 varieties of the common sausage, and account for about 25 percent of all sausage sold in the United States.

German sausage makers (wurstmachers) disagree among themselves about whether this favorite Americanized-sausage is a "wiener" or "frankfurter."

The "wiener" school contends that the sausage originated in Vienna (Wien), Austria, and has the full title of "wienerwurst."

The "frankfurter" school says a butcher's guild in Frankfurt, Germany invented the sausage—hence the title "frankfurter."

The birth of the American "hotdog" is equally hazy, although the most colorful legends point to Antoine Ludwig Feuchtwanger, a sausage vendor who immigrated to this country from Bavaria.

As the story goes, Antoine introduced his "red hots" to the citizens of St. Louis in 1883, and provided each customer with a white glove to hold the hot sausage. But, when he took his idea to the Chicago World's Fair, his profits at first nose-dived as customers failed to return the white glove. He and his wife hit on the idea of wrapping the sizzling sausages in a bun—and were instantly successful.

Some say the final shape of the frankfurter was the brain-child of an unknown butcher who was inspired by his dachshund. Most agree that it was christened a "hot dog" by a New York sports cartoonist in 1900. At a football game in the Polo Grounds, a concessionaire barked out, "get your dachshund sausages while they're red hot!" Dogged by a tight deadline for his cartoon on a talk-

ing sausage, with no time to look up the spelling of "dachshund," the cartoonist called his idea a "hotdog"—and we still do.

Even today, some people claim there is a difference between frankfurters and wieners. Some manufacturers say frankfurters contain only beef and pork which has been more coarsely ground and more generously spiced. Wieners, they claim, include beef, pork, and veal that has been finely ground and delicately spiced. Others claim the difference is the size of the sausage.

Regardless of which legend you adhere to, or by what name you call them, frankfurters, wieners, or hotdogs are essentially sausages made from chopped or ground meat that has been seasoned, cured, stuffed into casings, and then smoked and fully cooked.

To be frank about it, Federal meat inspection officials make no distinction between the respective terms.

All formulas (or recipes) must be approved in advance by officials of the meat inspection service of the U.S. Department of Agriculture's Consumer and Marketing Service. Naturally, these formulas vary among manufacturers and among various sections of the country, since each meat packer attempts to produce a distinctive product that will appeal to his customers.

The formulas, however, must conform to specific guidelines for the production of sausage under Federal inspection. This assures the consumer that the product will be wholesome, free of harmful ingredients, and truthfully labeled.

The manufacturing process begins with the grinding of large cuts of meat. After this initial grinding, curing ingredients and spices are added in carefully controlled amounts, and the mixture is more finely chopped for 8-12 minutes. Cold water or ice is added during this stage to help keep the meat cool and to add sufficient moisture for good texture and consistency. Federal regulations limit the use of water or ice to 10 percent.

Next comes the stuffing of the chopped mixture into either natural or artificial casings. Natural casings are derived from thoroughly-cleaned intestines of sheep or swine, and are left on the sausage at the completion of processing. This results in a frankfurter or wiener with a "skin." Artificial casings, on the other hand, are made from cellulose, and are peeled off after processing—resulting in a "skinless" product.

After stuffing, the casings are given a twist at regular intervals to form individual links—of various lengths, depending upon local preferences.

Next comes the smokehouse, where the franks are smoked for one to three hours. This develops the appetizing flavor and permanent, natural red color of the franks. And, most importantly, it almost completely destroys any surface bacteria.

The franks are then removed from the smokehouse, placed in a tight chamber, and cooked by continous sprays of hot water at about 160 degrees Fahrenheit. This is followed by chilling sprays of cold water, "peeling" of the skinless franks, and temporary storage before packaging.

Automation is coming to the frankfurter manufacturing process, as several meat packers are beginning to use machines which form, smoke, cook, rinse, chill, and package the franks in one continuous operation.

Packaging and labeling of frankfurters receive particular attention from Consumer and Marketing Service meat inspectors.

Federal regulations expressly prohibit the use of any packaging that might be misleading or deceptive in terms of color, quality, or the kind of product. Transparent or semi-transparent wrappers which are imprinted with red lines, letters, or illustrations are closely scrutinized when used on frankfurters. Fedral inspectors insure that at least 50 percent of the frankfurter is visible through an area of the wrapper that is free of color, print, or illustration, to insure that the actual color of the frankfurter is easily recognized.

The label is your complete "buyer's guide," for it tells the full story about the product—including an accurate statement of ingredients listed in a descending order of predominance.

From the product name, you will know whether you are buying—

- —All beef franks (those made exclusively with beef);
- —All meat franks (those made exclusively with meat, though it may be a combination of beef, pork and veal);
- —Franks with cereal and/or nonfat dry milk added, or
- —Imitation franks.

Cereals and/or nonfat dry milk are added to some frankfurters to help bind the meat together. Regulations require that such franks, when produced under Federal inspection, cannot contain more than 3.5 percent of either cereals or nonfat dry milk, or a combination of the two.

Those which do contain more than 3.5 percent of cereals or nonfat dry milk, as well as franks which have had more than 10 percent moisture added, must be labeled as "Imitation Frankfurters."

The label will show the addition of flavorings and spices, though Federal regulations do not require that each be listed separately. Those most commonly used are pepper, nutmeg, mace, cinnamon, mustard, coriander, sage, and garlic.

If artificial smoke flavoring has been used, this must be shown on the label. Likewise, any coloring of the casings—through use of dyes which must be approved jointly by the Food and Drug Administration and C&MS—will be shown. This coloring may appear on the surface of the frank, but cannot penetrate the inside.

Sodium nitrate and/or sodium nitrite are used in carefully controlled amounts as curing agents to preserve the natural red color of the meat. Consequently, these chemicals must be listed in the statement of ingredients.

The statement of ingredients will sometimes show the use of sodium erythorbate, sodium ascorbate, ascorbic acid, and/or citric acid. These ingredients are only permitted in carefully controlled amounts, as color "fixers" to help retain the cured-meat color under the bright lights of refrigerated grocery cases.

In addition to the product name and accurate statement of ingredients, the label must show the net weight of the package, the name and address of the manufacturer, and the Federal meat inspection symbol—which includes the identification number of the packing plant which prepared the franks.

This symbol is only applied to those frankfurters that have stood the test of wholesomeness and truthful labeling. It means the franks have been under the continuous supervision of highly trained Federal inspectors from the time the live animal entered the packing house door to when the packaged franks left for the trip to your favorite store.

It is your symbol of protection provided by USDA's Consumer and Marketing Service.

(The author is a Home Economist on the Labels and Standards Staff of the Meat Inspection Division, C&MS.)

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NEW DEVICE SORTS ORANGES BY COLOR

Packers may need to degreen less fruit in the future if this machine sorts automatically on a commercial scale.

by Otto L. Jahn
Earl K. Bowman
Jerome J. Gaffney

A rose by any other name may smell just as sweet, but would an orange of another color taste just as good? Some do, but consumers demand oranges that live up to their name. Packers cater to this demand by degreening or by adding color to fruit that, although ripe and delicious, has green or green-tinged rinds.

Packers may need to degreen less fruit in the future if tests now being made by scientists in the U.S. Department of Agriculture show that oranges can be automatically sorted by color. Under present practices, degreening treatments are applied to an entire lot of fruit on the basis of the needs of the greenest oranges.

Green oranges are held in storage rooms under controlled humidity and temperature for periods up to 84 hours or longer. Ethylene, a colorless, bottled gas that brings out the orange color in the rinds, is released in the storage room during this treatment period.

Only that part of the crop clearly needing degreening would be treated if tests by USDA's Agricultural Research Service show that the fruit can be sorted by color when it arrives in the packinghouse. The time and cost of holding and treating oranges would be appreciably reduced. Also, keeping quality of the fruit would be improved because fewer oranges would be exposed to the temperatures and humidity at which decay organisms thrive—conditions that are present in degreening operations.

A commercially-developed sorter that measures the light reflected from the surface of oranges is being tested by ARS engineers and scientists at Orlando, Fla. The device is sensitive to the differences in the light reflected by green, yellow, and orange shades, and separates the fruit into different groups on this basis.

The sorter is faster and more accurate than the human eye. It provides an objective way to select fruit which is superior to that of subjective human judgment. Its potential advantages will be tested to find out if they hold up under commercial requirements in packinghouses.

The surface-reflectance color sorter will be compared with a highly accurate light-transmittance sorter used by scientists in laboratory experiments. If results from the two devices are similar, then information previously obtained in the laboratory may be directly applicable to sorting fruit on a commercial scale.

It is already known that the reflectance sorter can operate faster than the laboratory sorter, which is hand-fed with fruit. The reflectance sorter automatically scans fruit passing through the machine from packing line conveyors.

These tests open a new chapter in research on potential applications of light-sensitive instruments in food industries. Earlier research by ARS scientists at Beltsville, Md., resulted in development of devices sensitive to interior as well as surface colors of commodities. From this research, commercial equipment to detect blood spots in eggs has been developed. It is used nearly universally at grading-packing plants. The same principle may soon be commercially applied to apples.

The new tests, based on surface colors only, may prove as beneficial to the citrus industry as the earlier tests were for other commodities. [Results will be published at the conclusion of the tests.]

(Dr. Jahn is a horticulturist in the Market Quality Research Division, ARS, stationed at Orlando, Fla. Mr. Bowman and Mr. Gaffney are engineers in the Transportation and Facilities Research Division, ARS, stationed at Gainesville, Fla.)